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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

APR 03 1992

163/21/0009 St Clair
Trade Waste Incinerator
RCRA - Permit

REPLY TO THE ATTENTION OF:
HRE-8J

William Child, Manager
Division of Land Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62794

Re: Off-site Policy Status of the Trade Waste Incineration (TWI) Facility
Sauget, Illinois
ILD 098 642 424

Dear Mr. Child,

The Trade Waste Incineration facility (TWI) in Sauget, Illinois has requested that the United States Environmental Protection Agency (U.S. EPA) re-evaluate its unacceptability status in regards to the off-site policy for receiving CERCLA waste (Revised Procedures for Planning and Implementing Off-site Response Actions, OSWER Directive No. 9834.11, November 13, 1987). TWI's unacceptability status was determined as a result of 11 unresolved violations of its air and RCRA permit conditions. In order to resolve these violations TWI entered into a Consent Decree, No. 91-CH-529, with the State of Illinois on December 23, 1991 (1991 Consent Decree). By resolving all violations, the facility could be reconsidered for acceptance of Superfund (CERCLA) waste under the off-site policy. TWI must also continue to comply with the operating parameters specified in the RCRA permit in order to be eligible to receive CERCLA off-site waste.

However, since the Consent Decree was signed, violations of the RCRA permit operating conditions have continued at each incinerator unit. Due to continuing violations, the unacceptablity status for receiving CERCLA off-site waste remains unchanged for all four incinerator units. The Illinois Environmental Protection Agency (IEPA) has requested that TWI submit a new waste analysis plan to determine a more representative analysis of the waste incinerated at the facility. TWI will also repeat the trial burn tests for all incinerator units to determine acceptable permit operating conditions. While undergoing these tests, controlled, safe operating procedures must be maintained in order to prevent any release that may be hazardous to human health or the environment. To accomplish this objective, TWI must comply with the conditions set forth in the RCRA permit.

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The U.S. EPA has reviewed the 1991 Consent Decree and the RCRA permit and has determined that in order for TWI to become acceptable under the off-site policy the following issues must be addressed:

1) In order to ensure complete combustion, an operating level of oxygen must be determined and maintained. A May 3, 1990, study by the U.S. EPA and OSHA/Department of Labor entitled "Report on Evaluation of Compliance with On-Site Health and Safety Requirements at Hazardous Waste Incinerators" revealed an excessive number of automatic waste feed cutoffs (AWFCO) at certain incinerator facilities. Region V believes that the primary cause for the high number of AWFCOs is the batch feeding of excessive amounts of volatile waste into the primary chamber. This causes a sudden increase in oxygen demand at the combustion interface, i.e., flame front, leading to a shortage of available oxygen for continued combustion resulting in a combustion upset. The decline in the oxygen level in the combustion gas also triggers a carbon monoxide (CO) excursion. Once triggered, the elevated CO level persists long after the oxygen level is restored in the combustion gas. An improved operating oxygen level must be set and maintained in order to prevent this event from occurring. Region V believes most of the combustion upsets and AWFCOs could have been prevented if a higher oxygen level was maintained in the combustion chamber. The levels set in the RCRA permit shall be upheld until new oxygen levels are determined and incorporated into a new or modified permit following public comment. These new oxygen levels should be based on the upcoming trial burn results and the analysis of operating data collected over the past several years.

2) Another critical parameter for the effective operation of the incinerator units is the waste feed rate. In order to maintain steady state combustion conditions, the waste must be accurately characterized, including heating value in BTUs, and fed at a rate that will ensure complete combustion and prevent AWFCOs. Limits must be set on total waste feed per unit time for each waste stream or waste stream type such as solid, liquid or organic wastes. A second condition that must be regulated is the instantaneous waste feed rate. This parameter can be defined as the maximum size of batches or containerized waste to the primary combustion chamber. Feeding the various types of waste at these rates should result in a total heat release rate in each chamber that matches the optimal conditions that are set in the test run.

3) The operating temperature limits set in the RCRA permit should be maintained until new limits for each incinerator are established based upon the upcoming trial burn tests and incorporated into a new or

modified permit, since it is not known if operating at the temperatures contained in the 1991 Consent Decree would guarantee compliance with the incinerator performance standards required under 40 CFR §264.343 and the RCRA permit.

4) A data collection system should be instituted for each incinerator unit, including Unit 1, in order to successfully monitor all operating conditions. The system should produce a complete set of measurements which are consistent with the operating conditions set forth in the permit and which can demonstrate that the facility is in compliance when waste is in the system. The exact format for data reports should be specified. Based on the knowledge gained by U.S. EPA upon reviewing TWI's previous data, U.S. EPA will be available to assist the IEPA to set up the requirements of the format. Any excursions must be reported to determine potential or actual equipment component failures that can lead to an emergency stack or vent opening. The U.S. EPA recommends that TWI provide information in the weekly upset conditions report based on the operating conditions set forth in the RCRA permit.

5) The AWFCO system should be tied to all parameters outlined in the RCRA permit. In addition to the Consent Decree's requirement to study the causes of excursions from the operating conditions as stated in Section IV, Paragraph M, a more stringent AWFCO limit should be set to allow an adequate amount of time for the incinerator unit to return to steady state operating conditions. This difference between the cutoff limit and the operating condition should be large enough so that corrections can be implemented before the operating condition is violated. This control measure should eliminate any emergency stack or vent openings from occurring.

6) No incinerator unit should operate unless it can comply with the operative RCRA permit as well as the Consent Decree. This is especially important during the study phase for Unit 1 outlined in the Consent Decree as referenced in Section IV, Paragraph K. All study phases should be done in the context of the permit trial burn conditions.

7) TWI must comply with the RCRA permit operating conditions regarding baghouse pressure drop and spray dryer absorber temperature. These values should be identified to the IEPA and U.S. EPA in the TWI weekly upset conditions report.

Once these issues have been adequately addressed, TWI should be able to operate without frequent activations of the emergency stack or vent openings.

The status for receiving CERCLA off-site waste can then be determined for the future. To be successful, the waste feed must be fully characterized, particularly in terms of thermal characteristics, and an adequate supply and infusion of oxygen into the combustion flame interface must be maintained at all times. Other conditions, including temperature, gas residence time, turbulence, and waste atomization must be maintained at the correct levels. A steady moderate waste feed in terms of volatility and heating value must be selected, so that efficient combustion and the elimination of combustion upsets can be achieved by each incinerator unit.

If you have any questions regarding the information contained in this letter, please contact me.

Sincerely yours,

David A. Ullrich

David A. Ullrich, Director
Waste Management Division

cc: William Ingersoll, IEPA
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